

The Official Action

The Examiner has rejected the aforementioned claims in view of the above references. Weber et al and Paschke et al have been cited in previous papers. The citation to Hawley's has been made for its disclosure of certain terms pertinent to the subject case, namely "polyamide", "filler", and "ethylene-propylene terpolymer".

Leading with Hawley's as the primary reference, the Examiner indicated that the defined terms read on those of the instant claims, but notes that the dictionary fails to disclose the specific melting point, ratio of filler to impact modifier and melt viscosity of the claimed compositions. Weber et al is applied for its disclosures of ranges of filler and impact modifier (and suggesting then a ratio of the two ingredients). Paschke et al is applied for its disclosure of melt viscosity. The Examiner concludes that it would have been obvious to prepare a composition using the ingredients noted in Hawley's, combined with the features of Weber et al and Paschke et al, and pertaining to polyamides having melting points of 290 C or greater.

Applicant's Invention

The present invention is directed toward compositions consisting of an aromatic polyamide, an inorganic filler, and an elastomeric impact modifier, wherein the filler and impact modifier are used in a specific weight ratio. The result is a material that has a good compromise in properties between stiffness and flexibility and toughness. Compositions of the invention are quite versatile, in that a wide range of inorganic fillers are disclosed as useful therein, including glass fibers, glass flakes, kaolin, clay, talc, wollastonite, calcium carbonate, silicate, carbon fibers, and potassium titanate. Moreover the particular claimed ratio of inorganic filler to impact modifier provides much-sought-after properties, including stiffness representative of the deflection temperature under load and flexural modulus and toughness representative of falling-ball impact strength and Izod impact strength, all in delicate balance.

Hawley's Condensed Dictionary

While Hawley's refers to terminology such as polyamide, filler, and ethylene-propylene terpolymer, it does not disclose their combinations and the importance of the particular ratios of filler to elastomeric impact modifier of the present invention. There is no suggestion or motivation to combine these ingredients in the precise manner claimed by Applicant to derive the present invention.

Specifically, Hawley's does not disclose the combinations of components as recited in the claim or the optimized ratio of filler to elastomeric impact modifier. Additionally, the term "inorganic filler" is exemplified in the present invention to include a variety of materials, as noted above. Some of these items, such as glass fibers, are not included in the definition given in Hawley's, as they would be considered reinforcing agents by the dictionary's definition.

Weber et al.

Weber et al provides no further basis to derive the selected ranges and ratios as set forth in the claims of the present invention. The reference discloses thermoplastic molding materials containing a partly aromatic copolymer, polymethacrylimide and polymeric component having OH groups in addition to fibrous or particular fillers (col. 8, lines 1 - 20) and rubber impact modifier (col 8, lines 21 - col 11, line 49). However there is no description of a particular ratio of inorganic filler to elastomeric impact modifier and in which both filler and modifier are blended with aromatic polyamide having a melting point of at least 290 degree C. Nor is there any disclosure of such compositions formed from aromatic diamines and aromatic carboxylic acids resulting in compositions exhibiting a well-balanced stiffness and toughness.

Paschke et al.

Paschke et al discloses a filled polyphthalamide comprising at least one filler selected from structural fiber and particulate fillers and a blend of (a) 100 pbw of a copolyphthalamide comprising from about 50 to about 90 mole % hexamethylene terephthalamide units; (b) from about 5 to about 40 pbw crystalline polypropylene; and (c) from 2 to about 20 pbw, per 100 parts combined weight of polypropylene and polyphthalamide, of carboxyl-modified polypropylene. As with Weber et al., this

reference does not disclose a particular ratio of inorganic filler to elastomeric impact modifier and in which both filler and modifier are blended with aromatic polyamides having a melting point of at least 290 degree C. Further the weight ratio of glass fiber to polypropylene used in the examples seen in Table II is outside the recited range and stiffness and toughness, and presumably does not exhibit the improved properties in excellent balance as in Applicant's compositions.

Conclusion

It is respectfully submitted that the combinations of ingredients of Applicant's claimed compositions and their optimized ratios are not suggested by any of the cited references in combination. Hawley's provides definitions of individual ingredients but no teaching of how to incorporate ingredients together as Applicants have done. Neither Weber et al. nor Paschke et al. do anything to overcome this deficiency, leaving the reader to make these calculations using hindsight and knowledge of Applicant's invention. The applied references in combination do not make obvious the particular requirements of compositions of the invention as instantly claimed nor the multitude of advantages they offer.

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



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